Cost Evaluation Studies in Cancer

CN1

COST-EFFECTIVENESS ANALYSIS OF OXALIPLATIN/5-FU/LV IN ADJUVANT TREATMENT OF STAGE III COLON CANCER IN THE UK AND GERMANY

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OBJECTIVE: In the MOSAIC trial, oxaliplatin/5-fluoruracil/leucovorin (FOLFOX4) as adjuvant treatment of stage III colon cancer improved disease-free survival (DFS) at 4 years, compared to 5-fluorouracil/leucovorin (LV5FU2) (69.7% vs. 61.0%, p = 0.002). We analysed the cost-effectiveness of FOLFOX4 in the UK and Germany to a lifetime horizon, from a payer perspective. **METHODS:** We developed Kaplan-Meier estimates of DFS and overall survival (OS) to 4 years. DFS was extrapolated from 4 to 5 years with a Weibull model and thereafter from life tables, adjusting for age and gender, assuming no relapses after 5 years. Using DFS and observed survival after relapse, we predicted lifetime OS. Life-years accrued were assigned weights according to chemotherapy-related toxicities, recurrence and age, to estimate QALYs. Costs were estimated from trial data, accounting for censoring; while costs of relapse and subsequent management were estimated from literature. Costs and QALYs, discounted at 3.5% and 5% per annum for the UK and Germany respectively, were bootstrapped to estimate the ICER distribution. **RESULTS:** Patients on FOLFOX4 gained an estimated mean 0.68 (95% CI: 0.08–1.31) QALYs for the UK and 0.57 (95% CI: 0.04–1.10) for Germany, at mean incremental costs of £3267 and £5844 respectively, resulting in mean ICERs of £4805 per QALY gained for the UK and €10,199 for Germany. If the willingness to pay for additional QALYs were £20,000 in the UK and €50,000 in Germany, FOLFOX4 would be cost-effective with probabilities of 95% and 96% in these countries respectively. **CONCLUSIONS:** If the estimated survival benefit of oxaliplatin is confirmed, FOLFOX4 would cost around £4800 (approx. €6,700) per QALY gained in the UK and €10,200 in Germany, well within conventional limits of acceptability. The difference between countries was largely attributable to the discount rates used rather than differences in organisation of health care.

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COST-EFFECTIVENESS OF TEMOZOLOMIDE FOR THE TREATMENT OF NEWLY DIAGNOSED GLIOBLASTOMA MULTIFORME IN THE UK

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OBJECTIVES: To estimate the cost-effectiveness (CE) of concomitant and adjuvant Temozolomide (TMZ) in glioblastoma (GBM) compared to initial radiotherapy (RT) alone, based on the UK health care system. **METHODS:** A cost-effectiveness analysis (CEA) from the perspective of the National Health Service has been performed. Data were derived from a large EORTC/NCIC phase III trial (Stupp et al., NEJM 2005). The primary endpoint was overall survival. As there was no negative impact of the experimental treatment on quality of life, life years were not adjusted. Costs included all direct medical costs. Economic data were collected prospectively for a subgroup of 224 patients (39%). Unit costs for (chemo)drugs, procedures, laboratory and imaging, RT, surgery and hospital costs per day were collected from the official national reimbursement lists based on 2004. For the CEA, the life-years of patients were expressed as 2-year restricted mean estimates, as well as mean survival estimates based on statistical extrapolations of the survival curves. The Incremental Cost Effectiveness Ratio (ICER) has been constructed. Confidence intervals for the ICER were calculated using Fieller's method and using bootstrapping, graphically presented on the CE plane and a CE acceptability curve is constructed. A discount rate of 3.5% was used for both costs and effects. **RESULTS:** The difference in 2-year restricted survival between the treatment arms was 0.17 life-years and the ICER was ≥28,418 per life-year gained. The extrapolated difference in survival was 0.45 life-years and the ICER amounted to ≥19,161 per life-year gained. For the full cohort, the ratios obtained were similar, but lower than those of the economic subgroup, due to subgroup selection factors that resulted in different 2-year restricted survival benefits. **CONCLUSION:** The results showed that treatment with concomitant RT plus TMZ may provide good value for money in this difficult indication in the UK.

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HEALTH ECONOMIC EVALUATION BASED ON THE 5–YEAR COMPLETED TREATMENT ANALYSIS OF THE ATAC TRIAL COMPARING ANASTROZOLE VERSUS TAMOXIFEN IN ADJUVANT TREATMENT OF POSTMENOPAUSAL HORMONE RECEPTOR POSITIVE EARLY BREAST CANCER

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OBJECTIVES: To assess the cost–effectiveness of anastrozole (Arimidex™) as adjuvant treatment in postmenopausal hormone receptor positive (HR+) early breast cancer (EBC). **METHODS:** A Markov state transition model was created to simulate the natural history of postmenopausal HR+ EBC over 20 years. Adverse events and direct rates of disease progression were obtained from the 5–year analysis of the ATAC (Arimidex, Tamoxifen Alone or in Combination) trial (n = 9,366). Progression to subsequent health states following initial disease progression was based on published clinical studies. Utility scores for different disease stages were obtained from published literature. Costs of breast cancer recurrence (locoregional and distant) were obtained from a retrospective chart review (1998) which was updated and validated by clinical expert opinion (2001). Costs were discounted at 3%/y. Base–case analysis considered Arimidex large pack price (€3.4286/day). **RESULTS:** Comparison with EBCTCG (Early Breast Cancer Trialists Collaborative Group) data shows that the model is valid for predicting clinical outcomes. At a life time horizon of 20 years, an incremental cost-effectiveness ratio (ICER) of €4233/life year gained (LYG) and €3958/QALY are obtained for anastrazole relative to tamoxifen. Conclusions were robust to variations in cost estimates of disease progression and of risk reduction by anastrozole with highest sensitivity to distant recurrence risk reduction. Outcomes were sensitive to the applied time horizon with an ICER of €8,474/LYG and €7581/QALY at 15 years and €26,758/LYG and €21,770/QALY at 10 years. For the Arimidex small pack price (€4.5611/day), ICERs are higher but remain below €30,000/LYG or QALY for a time horizon of at least 12 years. **CONCLUSION:** In adjuvant treatment ICERs are time horizon dependent due to different timings of treatment costs (initial 5 years) and benefits